



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,862	08/21/2003	Jason M. Hendler	D026/069987-031	7691

29391 7590 12/27/2004

BEUSSE BROWNLEE WOLTER MORA & MAIRE, P. A.
390 NORTH ORANGE AVENUE
SUITE 2500
ORLANDO, FL 32801

EXAMINER

CHEN, SHIH CHAO

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,862

Applicant(s)

HENDLER ET AL.

Examiner

Shih-Chao Chen

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-15, 17-21 and 23-29 is/are rejected.
- 7) ☒ Claim(s) 16 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/8/03, 1/26/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the three conductive vias in claim 8; and the size of the dielectric layer is smaller than a size of the ground plane in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

Art Unit: 2821

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: because the three conductive vias in claim 8; and the size of the dielectric layer is smaller than a size of the ground plane in claim 14 are not described in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 9-14, 17-20, 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Rawnick et al. (U.S. Patent No. 6,300,906).

Regarding claim 1, Rawnick et al. teaches in figures 1-20 an antenna comprising:

Art Unit: 2821

in stacked relation; a ground plane [18]; a dielectric layer [15, 17]; a plurality of conductive regions [21-24]; an intermediate layer [70] comprising a conductor segment and disposed between the ground plane and the plurality of conductive regions; a conductive ground via (i.e. outer jacket of coaxial cable) connected between at least one of the plurality of conductive regions and the ground plane; a conductive signal via [25] connected to one of the plurality of conductive regions; and wherein the ground and the signal vias are electrically connected to the conductor segment (See FIG. 10).

Regarding claim 9, Rawnick et al. teaches in figures 1-20 the antenna of claim 1 wherein the conductor segment provides inductive coupling between the ground via and the signal via [25].

Regarding claim 10, Rawnick et al. teaches in figures 1-20 the antenna of claim 1 wherein the plurality of conductive regions [21-24] provide capacitive coupling to the ground plane [18].

Regarding claim 11, Rawnick et al. teaches in figures 1-20 the antenna of claim 1 further comprising a ground terminal (i.e. SMA connectors) in electrical communication with the conductive ground via on a bottom surface of the antenna [10], wherein the antenna [10] is adaptable for mounting on a substrate [15] having a ground region, and wherein the ground terminal is adapted for connection to the ground region.

Regarding claim 12, Rawnick et al. teaches in figures 1-20 the antenna of claim 1 further comprising a signal feed terminal (i.e. SMA connectors) in electrical communication with the conductive signal via on a bottom surface of the antenna [10], wherein the antenna is adaptable for mounting on a substrate [15] having a signal feed

Art Unit: 2821

conductor [25], and wherein the signal feed terminal is adapted for connection to the signal feed conductor.

Regarding claim 13, Rawnick et al. teaches in figures 1-20 the antenna of claim 1 wherein a size of the dielectric layer [17] is substantially similar to a size of the ground plane [18].

Regarding claim 14, Rawnick et al. teaches in figures 1-20 the antenna of claim 1 wherein a size of the dielectric layer [15] is smaller than a size of the ground plane [18].

Regarding claim 17, Rawnick et al. teaches in figures 1-20 an antenna comprising in stacked relation: a first dielectric layer [86]; an conductive layer [70] comprising a conductor segment; a second dielectric layer [17], a plurality of conductive regions [21-24]; a conductive ground via (i.e. outer jacket of coaxial cable) connected between at least one of the plurality of conductive regions and extending downwardly to a bottom surface of the first dielectric layer; a conductive signal via [25] connected to one of the plurality of conductive regions and extending downwardly to a bottom surface of the first dielectric layer; and wherein the ground and the signal vias are electrically connected to the conductor segment (See FIG. 10).

Regarding claim 18, Rawnick et al. teaches in figures 1-20 an antenna comprising in stacked relation; a ground plane [18]; a first dielectric layer [86]; an intermediate conductive layer [70] comprising a conductor segment; a second dielectric layer [17], a plurality of conductive regions [21-24]; a conductive ground via (i.e. outer jacket of coaxial cable) connected between at least one of the plurality of conductive regions and the ground plane; a conductive signal via [25] connected to one of the

Art Unit: 2821

plurality of conductive regions; and wherein the ground and the signal vias are electrically connected to the conductor segment (See FIG. 10).

Regarding claim 19, Rawnick et al. teaches in figures 1-20 the antenna of claim 18 wherein the conductor segment inductively couples the ground and the signal vias (See FIG. 10).

Regarding claim 20, Rawnick et al. teaches in figures 1-20 the antenna of claim 18 wherein the plurality of conductive regions [21-24] provide capacitive loading for the antenna [10].

Regarding claim 27, Rawnick et al. teaches in figures 1-20 an antenna [10] adapted for mounting onto a substrate having a ground region and a signal feed, the antenna comprising; a dielectric layer [15] comprising opposing first and second surfaces; a conductive plate [21-24] disposed on the first surface; at least one conductive ground via connected to the conductive plate and extending to the second surface; at least one conductive signal via [25] connected to the conductive plate and extending to the second surface; the dielectric layer and the conductive plate defining apertures [14] therein; the ground via adapted for connection to the ground region [18]; and the signal via adapted for connection to the signal feed [21F, 23F].

Regarding method claims 28-29, the apparatus discussed above would perform the claimed method.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2821

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-5 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rawnick et al. (Cited above) in view of Nealy et al. (U.S. Patent No. 6,057,802).

Rawnick et al. teaches every feature of the claimed invention in paragraph 5 except the each one of the plurality of conductive regions comprises a closed plane figure having a boundary selected from among straight lines and curves; the each one of the plurality of conductive regions comprises a sector of a circle; the sector comprises a first straight line having a first and a second endpoint and a second straight line having a third and a fourth endpoint, and wherein the first and the second straight lines are joined at the first and the third endpoints to form an apex, and wherein an arc extends between the second and the fourth endpoints; and the plurality of conductive regions are disposed in a plane having a point defined therein, and wherein the plurality of conductive regions comprises a first, a second, a third and a fourth sector, and wherein the apex of each of the first, the second, the third and the fourth sectors is positioned an equal distance from the point, and wherein the arcs of each of the first, the second, the third and the fourth sectors circumscribe a circle in the plane.

Nealy et al. teaches in figures 9 and 17 the each one of the plurality of conductive regions [50] comprises a closed plane figure having a boundary selected from among straight lines and curves (See FIG. 17); the each one of the plurality of conductive regions [50] comprises a sector of a circle (See FIG. 17); the sector comprises a first straight line having a first and a second endpoint and a second straight

Art Unit: 2821

line having a third and a fourth endpoint, and wherein the first and the second straight lines are joined at the first and the third endpoints to form an apex, and wherein an arc [66] extends between the second and the fourth endpoints (See FIG. 17); and the plurality of conductive regions [50] are disposed in a plane having a point defined therein, and wherein the plurality of conductive regions comprises a first, a second, a third and a fourth sector, and wherein the apex of each of the first, the second, the third and the fourth sectors is positioned an equal distance from the point, and wherein the arcs [66] of each of the first, the second, the third and the fourth sectors circumscribe a circle in the plane (See FIG. 17).

In view of the above statement, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the four square-shaped conductive components as shown in Rawnick et al. by using the round trimming the corners which results in a circular element as taught by Nealy et al. in order to less capacitive coupling between the edges of circular elements (See col. 7, lines 60-67 & col. 8, lines 1-2).

8. Claims 6-8 and 23-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Rawnick et al. (Cited above) in view of Goubau (U.S. Patent No. 3,967,276).

Rawnick et al. teaches every feature of the claimed invention in paragraph 5 except for the first and the second ground vias and the first and the second signal vias are equally spaced about the point defined in the plane and located within one of the first, the second, the third, and the fourth sectors; the first and the second ground vias are disposed within the third and the fourth sectors; and each one of the three

Art Unit: 2821

conductive ground vias is connected to one of the four conductive regions, and wherein the conductive signal via is connected to a fourth one of the four conductive regions.

Goubau teaches in figures 1-5 the first and the second ground vias [21] and the first and the second signal vias [20] are equally spaced about the point defined in the plane and located within one of the first, the second, the third, and the fourth sectors [22, 22, 23, 23]; the first and the second ground vias [21] are disposed within the third and the fourth sectors [23, 23]; and each one of the three conductive ground vias [2, 3, 4] is connected to one of the four conductive regions [6, 7, 8], and wherein the conductive signal via [1] is connected to a fourth one of the four conductive regions [5].

In view of the above statement, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the ground via and signal via as shown in Rawnick et al. by using the ground vias and the signal via as taught by Goubau in order to obtain large bandwidth to permit the antenna to be used effectively for a number of operating wavelengths (See col. 1, lines 14-18).

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rawnick et al. (Cited above) in view of Moustakas et al. (U.S. Patent No. 6,556,173).

Rawnick et al. teaches every feature of the claimed invention in paragraph 5 except for the circular dielectric layer.

Moustakes et al. teaches in figure 2A the circular dielectric layer [203].

In view of the above statement, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the dielectric

Art Unit: 2821

layer as shown in Rawnick et al. by using the circular dielectric layer as taught by Moustakes et al. in order to reduce the area of the dielectric layer.

Allowable Subject Matter

10. Claims 16 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-1819. The examiner can normally be reached on Monday-Friday from 7 AM to 4:30 PM, First Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shih-Chao Chen
Shih-Chao Chen

Application/Control Number: 10/645,862
Art Unit: 2821

Page 11

Primary Examiner
Art Unit 2821

SXC
December 15, 2004